no good reason to dispute, the field experience of those who have had the best opportunities of forming an opinion on the subject would tend to support the probability that his conclusions are in the main correct.

WALSINGHAM.

NOTES.

MEN of science will be glad to learn that, at a meeting recently held at Dr. George Johnson's house, it was proposed to make Sir William Bowman some acknowledgment of the appreciation in which he is held on account of his high character, and professional and scientific attainments. A portrait of himself was suggested, and also, possibly, a reprint of some of his publications. Dr. George Johnson, Mr. J. W. Hulke, and Prof. Burdon Sanderson undertook to see Sir William Bowman, and ask his acceptance of the proposal. This consent having been received, a Provisional Committee was at once constituted, at whose invitation a number of eminent men of science formed themselves into the first list of the "Committee of the Bowman Testimonial Fund." As this body is already large and widely scattered, the practical carrying out of the scheme has been relegated to a Sub-Committee, consisting of the Treasurer (Dr. George Johnson), the Secretaries (Dr. W. A. Brailey and Dr. W. H. Jessop), Mr. Power, and Prof. Klein. It is not proposed to place any limit in either direction to the amounts of individual subscriptions, though the Committee are generally of opinion that large subscriptions will be found unnecessary, and that the compliment is a greater one when paid by a longer list of comparatively small subscriptions. They also hope that the funds will allow the distribution of a good reproduction of the portrait to subscribers of at least two guineas. Mr. Frank Holl, whose sudden death is deeply deplored by all who interest themselves in English art, had undertaken to paint the portrait.

IN the House of Commons on Tuesday Sir H. Roscoe asked the Chancellor of the Exchequer whether the astronomical instruments for the international photographic survey of the heavens, recommended by the Royal Societies of London and Edinburgh and the Board of Visitors of the Greenwich Observatory, the estimates for which had been forwarded from the Admiralty some months since to the Treasury, were yet ordered; and, if not, whether, in view of the fact that all the thirteen other sets of instruments were ordered by foreign and colonial Governments last year, and consequently the British Observatories would be placed at a serious disadvantage, Her Majesty's Government would be prepared to put the necessary amount on the Estimates in order to avoid further delay. To these questions the Chancellor of the Exchequer returned the following answer:—"The astronomical instruments required for the international photographic survey of the heavens have not yet been ordered, and the House will soon be asked to vote the necessary funds. It is, I believe, the case that thirteen instruments have been already ordered by different Powers and public bodies, but the hon. member is mistaken in supposing that all the Powers whose co-operation is contemplated have as yet ordered their instruments. On the contrary, two of the Great Powers, so far from ordering their instruments, have not yet definitely declared their intention to take part in the work. I do not think there is any cause to fear that Great Britain will be behindhand in the matter."

AMONG the Civil List pensions granted during the year ended June 20, 1888, were the following:—To the Rev. F. O. Morris, in recognition of his merits as a naturalist, £100; to Mr. William Kitchen Parker, F.R.S., in recognition of his services to science as an investigator, £100; to Mrs. Balfour Stewart, in recognition of the services rendered to science by her late husband, £50.

THE summer meeting of the Institution of Mechanical Engineers was opened at Dublin on Tuesday. In his Presidential address, Mr. Carbutt did not confine his remarks to purely mechanical subjects, but drew the attention of the members to some statistics relating to the population of Ireland and to Irish agriculture and industries. Mr. Carbutt expressed a decided opinion to the effect that more money should be spent in Ireland on education, and especially on technical education. "What I mean by technical training," he said, "is teaching children to use their hands and eyes, and also giving them such practical acquaintance with the applied sciences as may bear upon the industrial employments in their district. I hope the valuable speech on the need of technical education, made by the Marquess of Hartington at our annual dinner in May, will be widely read. I may refer to the work done in the agricultural school at Glasnevin, three miles out of Dublin, of which Mr. Carrol is the head. To this school is attached a farm of 180 acres for teaching practical farming. The Munster dairy school, started in 1880 with a farm of 126 acres, is quite full, and frequently has to refuse pupils. The Government grant to these two schools is £2671. The Baltimore industrial school, the Public Works Commissioners state, will practically be a technical school of fishing. The Belfast technical school is very successful in training pupils in flax cultivation and spinning. Dairy schools have been established twenty years in Denmark, Sweden, Germany, and Normandy. Let me give an example of what the result has been in Denmark. A Report on agricultural dairy schools has been lately presented to Parliament from a Departmental Commission presided over by Sir R. H. Paget, M.P., which states that in 1860 the British Vice-Consul at Copenhagen reported that the butter made in that country was execrably bad. What has happened? Denmark has now ten State-aided dairy schools, with the result that her exports of butter to the United Kingdom have increased as follows:—

1867	80,000 cwts.,	value	£422,479
1877	210,322 ,,	,,	1,347,791
1887	487,603 ,,	,,	2,669,123

In France theoretical and practical lessons in agriculture are now given every week in the primary schools; and a circular has been issued inviting the municipalities to provide for every district a demonstration plot of not less than half an acre for the purpose of applying the principles taught in the school."

TWO rather striking speeches on education were delivered at the Sorbonne on Monday at the distribution of prizes to the successful students of the great secondary schools of Paris. M. Blanchet, Professor of History at the Lycée Charlemagne, while expressing a high opinion of the value of the ancient classics in education, urged that methods of instruction should be adapted to the actual wants of the present day. He quoted the following passage written by Fleury at the end of the seventeenth century: "It seems to me that we ought to accommodate our studies to the present state of our manners, and to study those things which are of use in the world, as we cannot change this use so as to accommodate it to the order of our studies." "Truly," said M. Blanchet, "these old pedagogues were great revolutionists. What is new in the history of French pedagogism is not the spirit of innovation and progress but that of routine." M. Lockroy, the Minister of Public Instruction, spoke in a similar tone. It was essential, M. Lockroy pointed out, that Frenchmen should know what was said and written beyond their frontiers. Science was progressing everywhere, and they should be able to follow its progress abroad, especially in Germany and England. That was one reason why the modern languages had such a strong claim on the young of this generation. M. Lockroy protested against the notion that anyone thought of destroying Greek and Latin studies. But these studies were not the only solution of the very complicated problem of modern education. Accordingly, he had thought it right to take an opportunity of stating that the problem was receiving close attention. The University was anxious to study it, and would bring to the work its high sentiment of duty, and its passion for the public good.

On Monday Mr. Howorth asked the Under-Secretary of State for Foreign Affairs whether, in view of the continuous and deplorable destruction of the ancient monuments of Egypt by travellers and others, and of their incomparable value and interest, it would be possible to appoint some Engineer officer to make a survey of those monuments and to have custody of them in future. Sir J. Fergusson replied that it rested with the Egyptian Government to take the necessary measures. A Special Committee had been appointed to consider what ought to be done in the matter, and it had been decided to levy a small fee for seeing the antiquities. This would to some extent increase the sum which it was possible to devote to the preservation of ancient monuments.

There is no difference of opinion as to the great variety of uses to which aluminium might be applied if it could be produced in sufficient quantities at a reasonable cost. Hitherto it has been produced, almost entirely in France, by the Deville process; and this process involves so considerable an expenditure that the results have been by no means satisfactory. About seven years ago, Mr. H. Y. Castner, of New York, began experiments in that city with a view to improve the Deville process and cheapen the cost of aluminium by reducing the cost of producing the sodium from which it is obtained. Two years since, Mr. Castner erected experimental works at Lambeth, where he succeeded, after nearly eighteen months of further experimentation, in satisfying a number of men of science and others that he could produce sodium at one-fifth and aluminium at one-third of the cost previously incurred. A company was thereupon formed in order to take up and work the Castner patents. In October last the foundation-stone was laid of new works at Oldbury, near Birmingham, for the production of both sodium and aluminium on a large commercial scale; the works were virtually completed, and the successful manufacture of these products was begun about a fortnight ago; and a large number of gentlemen were invited to visit the works on Saturday last, and witness the processes in actual operation. Among those who accepted the invitation to be present were the Right Hon. A. J. Balfour, M.P., a trustee for the debenture-holders; Sir Frederick Abel, C.B., F.R.S.; Sir Henry Roscoe, M.P., F.R.S.; Lieut.-General Sir Andrew Clarke, G.C.M.G., C.B.; Prof. C. Roberts-Austen, F.R.S., of the Mint; Prof. Dewar, F.R.S.; Dr. Crookes, F.R.S.; Dr. Hugo Müller, F.R.S.; Lord Rayleigh, F.R.S.; Prof. Huntingdon, and others. According to the *Times*, only one opinion was expressed by the gentlemen who visited the works—some of them among the highest authorities on the subject—as to the practical success of all the operations witnessed, and the admirable arrangement of the plant employed. Mr. Castner was freely complimented on the skill and success with which he had developed his system.

Dr. Hans Reusch, of the Norwegian Meteorological Institute, who is engaged in collecting particulars of the earthquakes which occur in Norway yearly, has issued his report for 1887, from which it appears that earthquakes are far more frequent in Norway than has hitherto been imagined. Reports were received of twenty-three, all of which were faint, except three. One occurred on the night of May 7 in the Bömmel Islands, on the west coast, and was accompanied by subterranean detonations, another in the Islands of Værö and Röst, at the extreme point of the Lofodden Group, where doors and windows clattered and the slates on the roofs were pitched off. Again, on November 5, a severe shock of earthquake was felt at Bodö, on the north-west coast. Of the minor shocks those which frequently occurred on the Ytterö are particularly remarkable, as this island lies far out in the ocean, off the coast of Söndfjord.

The International Meteorological Committee will hold its fourth meeting at Zürich on September 3. This will be the final meeting of the Committee as so constituted. For various reasons it has been found impracticable to organize an International Meteorological Congress, more than one Government having declined to take part in such an assemblage. It is probable that, in future, occasional meetings will be held of a body to be composed of the chiefs of the various existing meteorological services, to whose meetings nothing of a diplomatic character will attach. The arrangements connected with such Conferences have yet to be made.

In the *American Meteorological Journal* for June, Mr. A. L. Rotch describes the meteorological organization of Austria and the independent observatories in connection with the Central Institute (not including those of the Hungarian service). There is a regular telegraphic weather service, but no storm warnings are issued; an agricultural service, however, exists in the summer season. The pressure at the high mountain stations is reduced to the level of 2500 metres. Mr. G. E. Curtis contributes an article on the trans-Mississippi rainfall, with reference to the popular belief that the rainfall is increasing in the Middle and Western States, the increase being attributed to the building of railroads and the extension of cultivation. Whether the amount of rainfall has actually increased or not does not appear to be proved; the author points out, however, that the breaking-up and tillage of the soil have increased its moisture, and with the growth of vegetation there have come an increased humidity of the atmosphere and a more general diffusion of rainfall. As an evidence of this result it is stated that the streams have a much more even flow than formerly. Dr. A. Woeikof offers an explanation of the different views of Mr. A. Hazen and Dr. Hann as to the general "inversion of temperature" in areas of high and low pressure. Mr. Hazen objects that the statement that, during the passage of anticyclones, the temperatures on high mountains are high in winter, is not applicable to Mount Washington, and thus no law at all. Dr. Woeikof supports Dr. Hann's views, and explains that the exception pointed out by Mr. Hazen may be due to the different type of weather in the Eastern States and in Europe, and to the greater rapidity of the passage of anticyclones in the former locality.

Another contribution to the chemistry of the rare earths, by Drs. Krüss and Kiesewetter, will be found in the current number of the *Berichte*. The somewhat startling results published a year ago by Drs. Krüss and Nilson, involving as they did the announcement of the existence of a large number of new chemical elements, appear to receive additional confirmation by this subsequent work undertaken by the two former chemists. They are not yet in a position to announce the complete isolation of any one of these new elements, but so much progress has been made in this direction that a mixture containing only two of them in any quantity has been arrived at. The task of separating these elementary constituents from the minerals which have hitherto been examined appears, in the face of the fact that their properties are so similar—their known salts being almost equally soluble, and the basicities of their oxides so nearly alike—well-nigh impossible. But the results of the examination of a large number of Scandinavian minerals show that Nature herself, with her infinite resource of time and circumstance, has partially, possibly in some yet unknown instance completely, performed this long and laborious operation for us. Different minerals from the same place, and even the same mineral from different localities, are shown by the absorption-spectra of their nitrates to consist of different constituents in varying quantities. Hence, by extending the observations over a large number of specimens it is possible to find a few which contain only a small number—one, two, or three—of these new elements in any considerable quantity. Working upon this principle, Drs. Krüss and Kiesewetter have been fortunate in discovering a mineral, yttro-titanite of Arendal, the absorption-spectrum of whose nitrates indicates the presence in large quantity of only two elements, viz. that constituent of didymium termed Diδ, and the constituent Xζ of holmium. The bands of these elements are very intense, and are of wave-lengths 521·5 and 452·6 respectively. Samarium is entirely absent, but there are small quantities of constituents of erbium and thulium present. However, the Diδ and Xζ so largely preponderate, that their fractionation is being undertaken. This happy discovery goes very far to prove the accuracy of the deductions made by Krüss and Nilson, which have caused so much discussion in chemical circles; for of the elements composing the mixture called didymium we have here only one of them, and of the constituents of holmium we have likewise but one representative. Therefore the compound nature of didymium and holmium may now be taken as proved.

At the meeting of the Scientific Committee of the Royal Horticultural Society, on the 24th ult., Dr. Masters showed ripe fruits of the Plymouth strawberry, grown from plants presented to him by Mr. G. F. Wilson. This curious monstrosity is an alpine strawberry, in which all the parts of the flower are more or less represented by leaves. The plant was mentioned by old botanical writers, but afterwards disappeared, or was so completely overlooked that its very existence was assumed to be a myth. Of late years, however, the plant has reappeared in several gardens, and the correctness of the old writers has been vindicated.

Plaster-of-Paris models of the bed of the Atlantic Ocean and of that of the Carribean Sea have been sent by the United States Hydrographic Office to the Cincinnatti Exhibition. They were made by Mr. E. E. Court, of the Hydrographic Office; and the charts from which they were constructed were carefully revised by Commander J. R. Bartlett and Lieut. J. L. Dyer, respectively former and present Hydrographer. *Science* suggests that duplicates or even photographs of these models would be of very great value in the teaching of physical geography. That of the bottom of the Atlantic would, says our American contemporary, give a pupil more actual instruction in a quarter of an hour than could be obtained by a week's study of descriptive text. This model, it seems, shows many things that will be surprising to almost everybody except the expert hydrographer. One of these is the great height of many of the small islands from the ocean's bed, when compared with their area either above the surface of the water or where they rest upon the bottom of the sea. This height is exaggerated in the model by the perpendicular scale being made fifty times as great as the horizontal scale; but, even allowing for that, these islands stand up like tall, narrow, truncated cones, many of them not being more than twice as far across at the base as at the top.

The United States Fish Commission lately sent off to California 600 live lobsters, 350 of which arrived safely at Sacramento. Several attempts had previously been made to send live lobsters across the North American Continent, but had failed. In the present instance, as we learn from *Science*, Colonel McDonald, Fish Commissioner, personally superintended the packing of the lobsters. A crate or box devised by the late Captain Chester was used. This was placed within another larger box, the intervening space being filled with pounded ice. In the inner box the lobsters were placed between layers of rock-weed, which at times was moistened with sea-water. Each box had an independent drain, so that the fresh water from the melting ice could not enter the lobster-box. The temperature of the latter was kept at 45° F. A Fish Commission car was used, the boxes along the side of it serving as the outer box of the combination described above; one hundred crates, each containing six lobsters, being placed in them, and surrounded with ice. Each morning before sunrise a careful inspection of the lobsters was made, and those that had died were removed. The first day 45 died; the second day, 55. After that the mortality was much less. All of those that died were in an advanced state of shedding, and were in poor condition when they started. One half of the 350 lobsters that arrived safely on the Pacific coast were placed in the ocean north of San Francisco, and the other half south. The condition of the water in that region is similar to that of the Atlantic off the Massachusetts coast. The temperature is about the same, but is more constant. The lobster on the Massachusetts coast crawls out into deep water in the summer, where the temperature is low, but it is thought that the equable temperature of the Pacific will enable the lobster in those waters to spend the whole year in one spot.

An account of two interesting old globes in the library of the Middle Temple will be presented in the next volume of the Hakluyt Society's series. These globes, one terrestrial, the other celestial, were made by E. Molyneux in 1593, and were the first ever produced in England. The geography on the terrestrial globe was afterwards brought down to 1603. A description of the globes was written in Latin in 1593 by Robert Hughes, a mathematician of the period. This description was rendered into English by Chilmead, of Oxford, in 1623; and Chilmead's translation, which has been prepared for publication by Mr. Coote, of the Map Department of the British Museum, will form the substance of the forthcoming volume. The editor of the volume is Mr. Clements Markham.

The Report of the Council of the North-Eastern Sanitary Inspection Association for 1887–88—the fifth financial year of the Association—has been issued at Newcastle. Excellent work is evidently being done by the Association. One of its good deeds has been the formation at Newcastle of a permanent exhibition of sanitary appliances. This exhibition was fitted up at considerable outlay by the Association as well as by exhibitors, and is open daily, free to the public, to whom it has proved of great value. "To see the best appliances in each department properly fitted," says the Report, "and to have any explanation desired freely given, where there is nothing on sale, are advantages that must be the better appreciated the more widely they are known. So far as known, there is no better permanent collection in the Kingdom."

In the *Entomologist's Monthly Magazine* for August, Dr. R. C. R. Jordan presents a list of species of Lepidoptera taken by him during a short visit to Jersey. In this list there are several species which have not hitherto been known to occur in the Channel Islands. Dr. Jordan proposes that a Committee of working entomologists should be formed for the thorough investigation of all orders of insects inhabiting these islands.

We have received the second supplement of Mr. John Wheldon's Botanical Catalogue. It includes, besides a large number of books relating to botanical subjects, many important works on agriculture.

The Calendar of the Heriot-Watt College, Edinburgh, for the session 1888–89, has been issued; and it is satisfactory to find that in this well-known institution provision is made for that higher commercial and technical education about which so much has lately been said. It is claimed that the College possesses, in its lecture theatres, laboratories, and workshops, every facility for preparing young men for work as merchants, manufacturers, or engineers, and for supplying in the evening such instruction as is required by those already employed in such occupations.

AT a recent meeting of the Wellington Philosophical Society, Mr. J. W. Fortescue spoke of the rapid increase of deer that have been acclimatized in the New Zealand mountains. Having had special facilities for observing these creatures, he proceeded to state some interesting facts as to their habits. At the close of his address Sir James Hector asked Mr. Fortescue, as an expert on the subject, whether the chief use of the antlers was not so much for fighting as for facilitating the progress of the stag through dense woods. He had considerable experience with the wapiti, in North America, and found that by throwing up the head, thereby placing the horns along the back, the animals were enabled to go forward with great rapidity and follow the hinds. He asked this, as it had been stated at a previous meeting of the Society that the antlers tended to entangle the deer. Mr. Fortescue said that Sir James Hector was quite correct in stating that the antlers assisted the stags in penetrating dense forests. Mr. Higginson also bore out this statement from his experience in India.

ON July 23, at 11.17 p.m., a brilliant meteor was seen in the province of Småland, in Sweden. At Nexjö it was seen due east, falling perpendicularly towards the horizon, when it suddenly burst.

DURING the month of June severe frosts occurred in the north of Finland, doing great damage to the crops.

NORWEGIAN hunters returning from the Arctic regions report much ice and severe storms.

ZOOLOGICAL GARDENS are being laid out in Christiania and Helsingfors.

THE additions to the Zoological Society's Gardens during the past week include a Feline Douroucouli (*Nyctipithecus vociferans*) from Savanilla, presented by Master Lester Ralph; a Crested Grebe (*Podiceps cristatus*), British, presented by Mr. W. Nicholls; a Brazilian Cariama (*Cariama cristata*) from South-East Brazil, presented by Mr. Fredrick Rose, jun.; an Indian Kite (*Milvus govinda*) from India, presented by Mrs. Dean; a Green Turtle (*Chelone viridis*) from the West Indies, presented by Baron Henry de Worms; a Hawk's-billed Turtle (*Chelone imbricata*) from the Bahamas, presented by Mr. W. T. Manger; a Corn Snake (*Coluber guttatus*) from North America, presented by Mr. J. Garnett; a Common Viper (*Vipera berus*), British, presented by Mr. F. C. Smith; a Virginian Fox (*Canis virginianus* ♀) from North America, deposited; a Derbian Screamer (*Chauna derbiana*) from the Northern Coast of Columbia, a Prince Albert's Curassow (*Crax alberti* ♀) from Columbia, four Beautiful Grass-Finches (*Poëphila mirabilis*), four Gouldian Grass-Finches (*Poëphila gouldiæ*) from Australia, purchased; two Rose-coloured Pastors (*Pastor roseus*) from India, received in exchange; two Collared Fruit Bats (*Cynonycteris collaris*), two Mule Deer (*Cariacus macrotis* ♂ ♀), a Canadian Beaver (*Castor canadensis*), a Thar (*Capra jemlaica*), born in the Gardens; a Brazilian Cariama (*Cariama cristata*), bred in the Gardens.

OUR ASTRONOMICAL COLUMN.

VARIABLE STARS.—Mr. Sawyer gives, in Nos. 174 and 176 of *Gould's Astronomical Journal*, the results of his observations of variable stars in the year 1887. The following are the observations for the more regular variables:—

R Virginis	M	June 17	Mag. 7·1	Calculated June 21
S Coronæ	M	Apr. 19	7·1	Apr. 6
R Lyræ	M	Sept. 9		Aug. 31
	M	Oct. 15		Oct. 16
	m	Nov. 10		Nov. 16
	M	Nov. 29		Dec. 1

The calculated dates are those which have been given in NATURE in the column headed "Astronomical Phenomena." U Monocerotis was observed at maximum on Jan. 15, March 4, April 28; and at minimum Feb. 18 and April 6; R Scuti was observed at maximum on Oct. 27, and at minimum on Sept. 14 and Nov. 23; W Cygni was at minimum, mag. 6·7, on July 23 and Dec. 8, and at maximum, mag. 6·1, on Sept. 13; Mira Ceti was at maximum, mag. 4·4, on 1886 December 30.

Mr. John Tebbutt reports (*Astr. Nachr.*, No. 2849) that η Argûs has undergone a notable increase of brilliancy of late, as he observed it as 7·0 mag. on May 19 of this year; whilst on April 23, 1887, it was only 7·5.

COMET 1888 *a* (SAWERTHAL).—The following ephemeris for Greenwich midnight for this object is from the *Dun Echt Circular*, No. 157:—

	R.A. h. m. s.	Decl. ° ′	Log Δ.	Log *r*.
Aug. 3	1 3 26	53 51·6 N.	0·3409	0·3881
5	1 2 5	54 5·5		
7	1 0 35	54 18·3	0·3424	0·3973
9	0 58 55	54 30·0		
11	0 57 5	54 40·5	0·3439	0·4062
13	0 55 5	54 49·8		
15	0 52 57	54 57·8	0·3455	0·4149
17	0 50 40	55 4·4		
19	0 48 15	55 9·7	0·3471	0·4234
21	0 45 42	55 13·6		
23	0 43 2	55 16·0 N.	0·3489	0·4316

ASTRONOMICAL PHENOMENA FOR THE WEEK 1888 AUGUST 5–11.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on August 5

Sun rises, 4h. 33m.; souths, 12h. 5m. 41·8s.; sets, 19h. 39m.: right asc. on meridian, 9h. 3·6m.; decl. 16° 48′ N. Sidereal Time at Sunset, 16h. 38m.

Moon (New on August 7, 18h.) rises, 1h. 57m.; souths, 10h. 8m.; sets, 18h. 17m.: right asc. on meridian, 7h. 5·8m.; decl. 21° 12′ N.

Planet.	Rises. h. m.	Souths. h. m.	Sets. h. m.	Right asc. and declination on meridian. h. m.	 ° ′
Mercury..	2 55	10 54	18 53	7 51·3	20 47 N.
Venus.....	5 7	12 35	20 3	9 32·6	16 2 N.
Mars......	12 37	17 21	22 5	14 19·9	15 17 S.
Jupiter....	14 16	18 40	23 4	15 38·6	18 44 S.
Saturn....	4 13	11 55	19 37	8 52·7	18 15 N.
Uranus...	10 16	15 54	21 32	12 52·7	4 58 S.
Neptune..	23 17*	7 4	14 51	4 1·3	18 58 N.

* Indicates that the rising is that of the preceding evening.

Aug.	h.	
6	9	Mercury in conjunction with and 0° 18′ north of the Moon.
7	10	Saturn in conjunction with and 0° 16′ south of the Moon.
7	—	Partial eclipse of Sun: visible as little more than a bare contact at Greenwich, beginning at 18h. 49m. and ending at 19h. 6m.
8	9	Venus in conjunction with and 0° 42′ south of the Moon.
10	23	Mercury at least distance from the Sun.

Variable Stars.

Star.	R.A. h. m.	Decl. ° ′		h. m	
U Cephei	0 52·4	81 16 N.	Aug. 9,	19 49	*m*
Algol	3 0·9	40 31 N.	,, 5,	20 2	*m*
U Hydræ	10 32·0	12 48 S.	,, 11,		*M*
δ Libræ	14 55·0	8 4 S.	,, 9,	23 26	*m*
U Coronæ	15 13·6	32 3 N.	,, 9,	1 42	*m*
U Ophiuchi	17 10·9	1 20 N.	,, 9,	1 16	*m*
			,, 9,	21 24	*m*
Z Sagittarii	18 14·8	18 55 S.	,, 8,	0 0	*m*
β Lyræ	18 46·0	33 14 N.	,, 9,	21 0	*M*
η Aquilæ	19 46·8	0 43 N.	,, 6,	22 0	*m*
X Cygni	20 39·0	35 11 N.	,, 8,	1 0	*M*
T Aquarii	20 44·0	5 34 S.	,, 5,		*M*
T Vulpeculæ	20 46·7	27 50 N.	,, 10,	23 0	*M*
δ Cephei	22 25·0	57 51 N.	,, 9,	20 0	*M*

M signifies maximum; *m* minimum.